Trauma Screening Tools for Youth: Current Practices and Future Directions

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Abstract

Approximately 60.9% of American individuals have been exposed to trauma in childhood, with around 8% of affected youth developing PTSD by age 18. Early identification of trauma symptoms in young people is crucial, as untreated PTSD can disrupt neurodevelopment, impair emotional regulation, increase suicide risk, and lead to occupational and educational disabilities. This study presents a comprehensive review of current PTSD screening approaches for youth. First, an exploration into the various risk factors associated with PTSD is undertaken, pointing to the complex task of diagnosis and treatment. Next, the importance of the early identification of PTSD symptoms for timely intervention is investigated, highlighting the efficacy of various treatments in improving outcomes for affected youth. Furthermore, the study analyzes existing PTSD screening tools for youth, including the Child PTSD Symptom Scale (CPSS-5), the Clinician-Administered PTSD Scale for DSM-5 Child/Adolescent Version (CAPS-CA-5), and the Child Trauma Screen (CTS), showing their strengths, applications, and limitations. Lastly, highlighting the need for innovative screening tools, digital PTSD screenings are proposed as a potential option for increasing the accessibility and efficiency of PTSD screening tools for adolescents.

Keywords: child, adolescent, trauma, posttraumatic stress disorder, PTSD screenings, adverse childhood experiences

Introduction

According to the *Diagnostic Statistical Manual of Mental Disorders, Fifth Revision* (DSM-5), experiencing traumatic events such as death, severe injury, or violence one or multiple times can lead to the development and diagnosis of posttraumatic stress disorder (PTSD) [1]. Exposure to traumatic events is common during childhood, with an estimated 60.9% of American adults having experienced an adverse childhood experience (ACE) at least once [2, 3]. Of these traumatized youth, an estimated 8% develop PTSD by age 18 [4]. PTSD is defined as a psychological disorder that anyone of any demographic can develop after a traumatic event and is diagnosed after a month of the following recurrent symptoms.

The DSM-5 classifies PTSD under a new category of trauma- and stressor-related disorders. The core diagnostic criteria for PTSD in youth aged 6 years and older are akin to the criteria for adults. The following symptoms emphasize the nature of PTSD: experience intrusive symptoms, an avoidance to traumatic stimuli, experience negative cognitions or emotions about the traumatic event that can lead an individual to feel guilty for the traumatic event or feel a persistent negative state of emotion, hypersensitivity or irritability.

The early identification of trauma symptoms in young people is vital due to the highly disruptive nature of PTSD. Left untreated, PTSD disrupts the proper course of

neurodevelopment, reducing the size of the hippocampus [5] and impairing emotional regulation and threat reactivity in adolescents [6]. PTSD has also been discovered to heavily impact the quality of life of adolescents, affecting academic performance and increasing the likelihood of suicide risk [7] and occupational and educational disabilities [8]. Given the severe consequences of unidentified PTSD symptoms, as well as the high prevalence of trauma exposure in childhood, the availability of effective PTSD screening options for youth is imperative.

The Present Study

The present study conducts a comprehensive review of the current landscape of youth PTSD screenings as seen in academic literature. First, the various risk factors for developing PTSD are discussed, illustrating the complexity of diagnosing and treating PTSD. Next, the importance of the early identification of PTSD symptoms for timely intervention is investigated, highlighting the effectiveness of various treatments like Cognitive Behavioral Therapy (CBT), Dialectical Behavior Therapy (DBT), and pharmacotherapy in improving outcomes for affected youth. This study then analyzes existing PTSD screening tools for youth, namely the Child PTSD Symptom Scale (CPSS-5), the Clinician Administered PTSD Scale for DSM-5 Child/Adolescent Version (CAPS CA-5), and the Child Trauma Screen (CTS), highlighting their strengths, applications, and limitations. Finally, digital screening tools are proposed as a potential alternative for increasing the accessibility and efficiency of PTSD screening tools for adolescents.

Risk Factors for PTSD in Youth

The effective diagnosis and the subsequent treatment of PTSD in young people hinges on a thorough understanding and consideration of various risk factors. This understanding not only facilitates the accurate diagnosis of PTSD, but also serves to identify specific populations at risk, thus promoting the availability of trauma screenings within communities [9]. Research demonstrates a variety of alternative screening options to address the diverse risk factors associated with PTSD in adolescents.

Adverse Childhood Experiences

A form of childhood trauma exposure, adverse childhood experiences (ACEs), such as exposure to neglect or violence, are highly common experiences, with approximately 64% of American adults reported experiencing at least one ACE during childhood [10]. ACEs have a strong, positive correlation with PTSD, as proven by a study that examined adolescents and concluded that those with moderate or high exposure to potentially traumatic childhood experiences had significantly greater posttraumatic stress disorder checklist for the fifth edition of the diagnostic and statistical manual of mental disorders (PCL-5), a self-report measure that assesses DSM-5 symptoms of PTSD.

Because of their prevalence, many states have recommended universal screening for ACEs at pediatric primary care visits. However, despite their high incidence, pediatricians have been slow to implement ACEs screening and it is only performed in a small portion of pediatric primary care visits. Additionally only 28% of trauma centers in the U.S. routinely screen for PTSD, a potential consequence of experiencing an ACE [11]. Screening for PTSD in a population, as well as providing accessible screening tools, that has experienced an ACE is critical, because evidence shows that ACEs are directly correlated with PTSD [11]. In order to successfully treat PTSD in a large number of youth, it is furthermore imperative that screenings are made more accessible to affected communities [11].

Demographic Variables

To begin, biological risk factors, particularly epigenetic markers [12], play a significant role in the development of PTSD. Research shows that childhood exposure to trauma can induce genetic mutations in stressor-related genes, increasing susceptibility to the development of PTSD symptoms following traumatic experiences [12]. In addition, demographic factors have been proven to be associated with PTSD outcomes in adolescents. individuals from lower socioeconomic backgrounds report higher levels of childhood trauma exposure [13], and research shows that Black communities are particularly at risk of trauma exposure due to increased susceptibility to racism [14]. Gender also plays a significant role, with females exhibiting higher rates of PTSD despite males experiencing more traumatic events [15, 16]. One report states that females have a lifetime prevalence for PTSD of 10% while males have a prevalence of 5% [17]. This outcome is partly due to females experiencing more severe traumatic events in the form of sexual violence, which increases PTSD outcomes in young individuals [18, 19]. These demographic considerations in susceptibility to adolescent PTSD highlight the need for current screenings to consider these complex variables in assessing for PTSD risk.

Comorbid Conditions

Furthermore, existing literature suggests that comorbid conditions are a significant risk factor for PTSD. Young individuals with PTSD have a high likelihood of being diagnosed with other psychiatric disorders, shedding light on existing psychiatric issues as a risk factor of PTSD [20]. In a large epidemiologic survey of U.S. adults diagnosed with PTSD, 79% of women and 88% of men have one or more diagnoses for other psychiatric disorders, particularly depression [20]. Common psychiatric disorders that were found to be comorbid with PTSD are major depressive disorder, anxiety disorders, and substance use disorders [20, 21, 22]. Comorbidity with these psychiatric disorders complicates treatment because it increases the number of interacting factors to account for when treating PTSD. For example, a portion of the PTSD population may misuse substances to self-medicate for their trauma disorder, which can exacerbate withdrawal symptoms and worsen the symptom severity [20].

Current literature shows that the implementation of additional screening measures, including self-screening, prior to a PTSD screening is an effective method of accurately

identifying comorbidity with a PTSD diagnosis [23]. Given that comorbidity with PTSD can lead to complications with treatment, research suggests self-screening measures as a potential solution for early identification, which saves the time of psychiatric clinicians and saves resources of the healthcare system [24].

Early Identification and PTSD Interventions

The importance of PTSD screenings cannot be overstated, as early identification is necessary to begin evidence-based treatments for improving its symptoms. They enable an early identification of symptoms, allowing for timely intervention with appropriate treatments such as CBT, DBT, and/or psychopharmacological medications. Current literature shows that, by identifying PTSD early, young individuals can access effective interventions promptly [25], potentially preventing symptom exacerbation and improving long-term health outcomes. As such, integrating PTSD screenings into routine healthcare practices and community interventions may be vital for enhancing the overall management of this condition [26].

A variety of treatments are available that have been proven to be highly effective in treating youth PTSD. Cognitive Behavioral Therapy (CBT), a psychotherapeutic approach, is the most commonly used treatment for PTSD in adolescents [27]. It focuses on altering negative thought patterns and behaviors that exacerbate PTSD symptoms [28]. Studies show CBT significantly improves PTSD symptoms in youth, with high rates of success observed, with one study even identifying 92% of participants aged 8-18 no longer meeting criteria for PTSD after the administration of CBT [29]. In addition, dialectical behavior therapy (DBT), originally designed for cases of complex and high-risk diagnoses, incorporates mindfulness and emotional regulation techniques [30, 31]. DBT for youth with PTSD aims to develop tolerance for trauma, foster positivity, and enhance life satisfaction, and literature even suggests DBT to be even more effective than CBT in terms of decreasing youth dropout rates and PTSD remission rates [32]. These treatment modalities may be combined with pharmacotherapy, which involves prescribing drugs, for the treatment of PTSD in adolescents Selective serotonin reuptake inhibitors (SSRIs) like paroxetine and fluoxetine, along with venlafaxine, have shown effectiveness in treating youth PTSD [33]. Studies suggest these medications are fast-acting and moderately effective, especially when combined with CBT or DBT [34]. With these clinically effective interventions at hand, screening and identifying students impacted by potentially traumatic events can assist families and schools in offering vital support to youth [35].

Current Screenings for PTSD Diagnosis in Youth

To improve adolescent PTSD screening methods, it is essential to first comprehensively understand the strengths and limitations of commonly used PTSD screening tools today. In this section, several of the most popularly implemented PTSD screening tools—CPSS-5, CAPS-CA-5, and CTS— are analyzed, as well as their unique approaches to assessing PTSD symptoms and trauma exposure in youth.

Child PTSD Symptom Scale (CPSS-5)

The CPSS-5, which evaluates the adolescent's trauma type and various symptoms, is clinician-administered in medical settings, and also comes in a self-report version (CPSS-5 SR) that is primarily administered in school settings [37]. The CPSS-5 has been shown to be an internally consistent (α = .924), valid, and reliable (r = .800) assessment tool for the diagnosis of PTSD in children aged 8 to 18 [36]. It is scored with an indication of PTSD severity, ranging from minimal severity (0-10) to very severe (61-80). The screening tool, which contains 27 items in total, is scored by adding together the ratings of 20 items that measure the presence of intrusion, avoidance, cognition, and arousal symptoms.

In an optional section of the CPSS-5, 7 items asking the participant a variety of potential trauma experiences are answered with either a "yes" or a "no." Examples of these questions include, "[Have you experienced] Being touched in your sexual/private parts by an adult/someone older who should not be touching you there," or "[Have you experienced] Serious accident or injury caused by a car or bike crash, being bitten by a dog, or caused by playing sports." Under these listed questions is a free response question that asks, "Which of these events bothers you the most?" Finally, the trauma screen section of the CPSS-5 asks for the participant's reaction to these traumatic events. For example, "When the event happened, did you feel fear that you were going to die or be seriously injured? Fear that someone else was seriously hurt? Unable to help yourself? Shame or disgust?"

In the main section of the CPSS-5, four items asking for the participant's experiences following a traumatic event serve to diagnose PTSD by targeting the four symptom types of PTSD. Responses are measured by frequency the patient experiences these symptoms, and are presented in a manner similar to a Likert scale. A sample of questions from each symptom type include: "Having upsetting thoughts or pictures about it that came into your head when you didn't want them to [Intrusive Symptom]", "Having bad thoughts about yourself, other people, or the world (for example, 'I can't do anything right', 'All people are bad', 'The world is a scary place') [Cognitive Symptom]", "Trying to stay away from anything that reminds you of what happened (for example, people, places, or conversations about it) [Avoidance Symptom]", and "Being jumpy or easily scared (for example, when someone walks up behind you, when you hear a loud noise) [Arousal Symptom]."

The strength of CPSS-5, which evaluates the participant's trauma type and various symptoms, is that it captures a large range of experiences due to being based on a Likert scale. Medical providers are able to use the CPSS-5 to obtain a useful metric that determines the severity of a patient's PTSD, which is a function that screening tools asking binary questions such as "yes" or "no" cannot achieve. The CPSS-5, while effective, nevertheless presents challenges due to its time-consuming nature. The clinician-administered version of CPSS-5 requires upwards of 30 minutes for administration and scoring, adding strain to the medical system and hindering universal screening efforts [37]. On the other hand, the self-reported version of the CPSS-5 is subject to social desirability bias, a phenomenon in which survey respondents respond to questions in a manner that is viewed favorably by others [39]. As such, while more inexpensive and capable of reaching more affected youth compared to the clinician-administered CPSS-5, the self-reported version is not without limitations.

Clinician Administered PTSD Scale for DSM 5 Child/Adolescent Version (CAPS-CA-5)

In addition, the CAPS-CA-5 [40] is another popularly used PTSD screening tool. The CAPS-CA-5 is based on the DSM-5 criteria for diagnosis, and it is also a modification of the

Clinician Administered Scale for DSM [40]. Although there have been no studies measuring the internal consistency and reliability for the CAPS CA - 5 specifically, the CAPS designed for adults demonstrates a strong internal consistency of (α = .88) and a good test-retest reliability (*r* = .78) [40].

The CAPS-CA-5 contains 30 items used to assess PTSD symptoms and diagnose PTSD in children aged 7-18. The CAPS-CA-5 is a modification of the Clinician Administered Scale for DSM (CAPS), which is designed for the diagnosis of PTSD for adults. The CAPS-CA-5 is based on the DSM 5 criteria for children (aged 7-18). Critical revisions of the CAPS-CA-5 were made with changes to the DSM 5, which updated existing symptoms. Furthermore, a traumatic event must be identified for the use of CAPS CA - 5 screening and a single severity score is scaled.

Sample items include the following: “In the past month, did you get very upset, afraid, or sad when something reminded you of the bad thing that happened? [Criterion B4]”, “In the past month, have you tried to stay away from people, places, or things that remind you of the bad thing that happened? [Criterion C2]”, “In the past month, have you had trouble remembering important parts of the bad thing that happened? *(Do you feel there are gaps in your memory of [EVENT]?)* [Criterion D1]”, and “In the past month, have there been times when you were quick to show your anger or got into arguments or physical fights? [Criterion E1].”

The CAPS-CA-5 exclusively clinician administered in medical settings with no self report version available [40]. Compared to the CPSS-5, the challenges posed by the time required to administer the screening is even worse with the CAPS-CA-5, which is exclusively clinician-administered and requires 45 to 60 minutes to administer [40], straining the healthcare system. In addition, while these PTSD diagnostic tools are provided in multiple languages, this advantage does not fix the limitations of the language barrier between the medical provider and the participant in the case of clinician-provided PTSD screenings [41,42,43]. These problems posed by both the CPSS-5 and CAPS-CA-5 contribute to the underdiagnosis of PTSD, because an overburdened healthcare system is limited in its ability to accurately diagnose people, pointing to obstacles in the efficiency of the screenings [44].

Child Trauma Screen (CTS)

The CTS [45] is an empirically supported screening measure of trauma exposure and PTSD symptoms for children aged 6-17. It does not, however, provide a diagnosis. There are two formats of screenings, which are the child report answered directly by the child that experienced the traumatic event and the caregiver report answered by the parents of the child that experienced the traumatic event. The 10 items are identical in these reports aside from the language used to address either the child or the caregiver.

The CTS is internally consistent (α = .78 for both child and caregiver reports), maintains convergent validity (*r* = .83 and *r* = .86), divergent validity (mean across measures and reporters, *r* = .31; range *r* = .01-.70), and criterion validity (sensitivity = 0.83 and 0.76; specificity = 0.95 and 0.79, correct classification 89.3% and 81.4%).

The CTS is divided into two parts, titled “Events“ and “Reactions”. “Events” contains four items that identify a child’s traumatic event experience and is answered with a “yes” or a “no.” Items from this section include the following: “Have you ever seen people pushing, hitting, throwing things at each other, or stabbing, shooting, or trying to hurt each other?”, “Has someone ever really hurt you? Hit, punched, or kicked you really hard with hands, belts, or other objects, or tried to shoot or stab you?”, “Has someone ever touched you on the parts of your

body that a bathing suit covers, in a way that made you uncomfortable? Or had you touch them in that way?", and "Has anything else very upsetting or scary happened to you (loved one died, separated from loved one, been left alone for a long time, not had enough food to eat, serious accident or illness, fire, dog bite, bullying)? What was it?"

"Reactions" contains six items that identify a child's symptom type and is answered by a scale of 0 to 3 that determines symptom frequency. These four choices are 0: "Never/ Rarely", 1: "1-2 times per month", 2: "1-2 times per week", and " 3+ times per week." Items in this section include "Strong feelings in your body when you remember something that happened (sweating, heart beats fast, feel sick)", "Try to stay away from people, places, or things that remind you about something that happened", "Trouble feeling happy", "Trouble sleeping", "Hard to concentrate or pay attention", and "Feel alone and not close to people around you."

The CTS is commonly utilized by clinicians and school counselors interested in quickly screening for potential trauma risk [45]. Compared to the CPSS-5 and CAPS CA - 5, which take over 30 minutes for clinician-administered screenings, the CTS is brief as it only takes an estimated 10 minutes for a respondent to complete. This is a strength because it lowers the burden of time on the healthcare system, which is a critical limitation of both the CPSS-5 and the CAPS CA-5 that contribute to PTSD underdiagnosis. However, the CTS cannot be used as a tool to diagnose PTSD and does not include all possible trauma exposure or reactions [45], which strictly limits its usage to being a trauma screen. Lastly, as a self-report measure like the self-reported version of CPSS-5, the CTS is subject to social desirability bias [39], which poses obstacles in accurately depicting trauma symptoms in adolescents. Addressing these challenges of modern-day PTSD screening tools for youth requires innovative approaches, and existing literature suggests that digital screenings may offer a promising solution [46].

Improving Current Screening Methods: Digital Screening Tools

Digital applications for the diagnosis of PTSD in youth are being studied, and this field is constantly being developed. Improving a digital form of screening is important because it can remove limitations of exclusion due to language [47], introduce an immediate PTSD intervention digitally, and remove limitations regarding hospital funding because of the low cost of screening [48]. Furthermore, digital utilization rates among young individuals are high, with a study reporting that 87% of young adults had access to the internet using their smartphones [49], rendering digital screening tools an effective option to diagnose PTSD in youth.

A digital application of PTSD screening can extend beyond the traditional paper and pencil self report assessment, which may be difficult for children who have not developed the sufficient reading comprehension skills to complete effectively [50]. For example, a study conducted by Asnaani et al. examined the feasibility of the *CPSS-5 Screen Team Game,* a mobile game adaptation of the CPSS-5 with beach-themed aquatic characters that assess the participants 6 PTSD symptoms using engaging activities such as "swiping squid ink away from the screen to reveal questions [51]. The study demonstrated internal consistency (α = .79) and high convergent validity (r (49) = .79, p < .001.)

This establishes the potential benefits of digital screening tools as a low cost and accessible screening tool, and the effectiveness of digital evaluation has been confirmed to be as accurate as evaluation from a trained clinician [52]. Another study [53] found that

computer-administered PTSD screening was equally effective to clinician-administered PTSD screening. The same study confirmed the feasibility of the computer-administered screening and found that participants were willing to enter sensitive personal information regarding PTSD. A different digital application is the use of smartphone sensors to passively collect relevant markers of PTSD, which include avoidance behaviors, signs of cognitive changes, and tracking sleep data [52].

In addition, the advancement in technologies in digital applications and machine learning has allowed for many studies to investigate an emerging digital marker for PTSD [52, 54]. Generative AI has a high potential for administering and processing digital screenings as they can adapt to the user's responses and ask questions similarly to the procedure a provider would perform. Furthermore, by analyzing user responses together with internet data and electronic health records, artificial intelligence is proven to be able to accurately predict psychiatric illness in patients [55]. Although the use of artificial intelligence is not an established method for screening, the integration of AI into digital screening devices can dramatically reduce the cost of administering PTSD screening.

Potential digital applications can be paired with the use of machine learning in artificial intelligence, which in the most common case is defined as the training and artificial intelligence on data that has been verified by human beings to provide a basis of truth so that an intelligence can emerge that is capable of correctly identifying data types without human intervention [55]. Artificial intelligence and machine learning can be used to generate new markers of PTSD using both passively (data collected from the phone) and actively collected data (screenings and questionnaires) [56]. Another limitation is that technology has a high initial cost to implement, since hospitals need to buy mobile technology with touch screen capabilities [56].

Conclusion

Youth PTSD is prevalent and highly disruptive; PTSD affects neurodevelopment in youth and is associated with a high likelihood of comorbidity with other severe mental disorders, suicide risk, and educational disability. As such, the early identification of trauma symptoms that takes into consideration common risk factors for PTSD is crucial for effective PTSD treatment, yet PTSD remains underdiagnosed due to barriers present in the CPSS-5, the CAPS-CA 5, and the CTS.

These commonly used screening tools, although found to be statistically valid in current literature, continue to pose challenges in the timely and accurate diagnosis of PTSD. Digital PTSD screenings offer an innovative approach to improve current methodologies. Future research that prioritizes the validation and adjustment of digital screening tools for diagnosing PTSD in youth is recommended. The integration of digital technologies in the identification and treatment of PTSD in youth is an exciting opportunity to intervene in the prevalent cases of trauma exposure among children and adolescents.

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